CLAIMS

What is claimed is:

1. A locking mechanism for a support leg hingedly attached to a support surface and rotatable between an extended position and a folded position, comprising:

a base, configured for attaching to the support surface, the base having a plurality of angularly spaced, radial teeth, and a discontinuous circular glide ring disposed about a perimeter of the radial teeth;

a coupler, disposed at an end of the support leg, having a plurality of angularly spaced, radial teeth, and a discontinuous annular glide ring slot disposed about a perimeter of the radial teeth, the teeth and glide ring of the base being configured to mate with the teeth and glide ring slot of the coupler; and

a selectively releasable engagement mechanism, configured to engage and disengage the base with the coupler.

2. The locking mechanism of claim 1, wherein the teeth of the base and the teeth of the coupler are flat-topped to allow smooth sliding contact during rotation of the support leg between the extended position and the folded position.

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3. The locking mechanism of claim 2, further comprising:

a hub, disposed on the base, the plurality of teeth of the base and the glide ring being disposed on the hub;

a socket, disposed in the coupler, configured to slidably receive the hub, and having an outer socket wall, the plurality of teeth of the coupler and the glide ring slot being disposed in the socket;

wherein at least two of the plurality of teeth of the coupler have a distal end connected to the outer socket wall; and

wherein the discontinuity of the glide ring comprises at least two tooth gaps configured to align with and receive the distal ends of the at least two teeth when the coupler is engaged with the base, and the glide ring is configured to slide upon the flat tops of the at least two teeth when the coupler is disengaged and rotated with respect to the base.

4. The locking mechanism of claim 3, wherein the at least two teeth of the coupler and the at least two tooth gaps of the base are separated by about 90° from each other.

5. The locking mechanism of claim 3, wherein the at least two teeth of the coupler comprise four teeth, and the at least two tooth gaps of the base comprise four tooth gaps.

6. The locking mechanism of claim 1, wherein the teeth are uniform in width.

7. The locking mechanism of claim 1, wherein the teeth are non-uniform in width.

8. The locking mechanism of claim 1, wherein the base and the coupler are configured for interlocking engagement with each other only at selected angular positions.

9. The locking mechanism of claim 8, wherein the selected angular positions include the leg (i) in an extended position substantially perpendicular to the support surface, and (ii) in a folded position substantially parallel to the support surface.

10. The locking mechanism of claim 1, further comprising a biasing member, configured to bias the teeth of the base away from the teeth of the coupler when the engagement mechanism is disengaged.

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11. The locking mechanism of claim 1, wherein the selectively releasable engagement mechanism comprises:

a biasing spring, configured to bias the coupler away from the base, to encourage disengagement of the teeth of the base and the coupler;

a cam mechanism, associated with the coupler, configured to bias the coupler toward the base, to encourage engagement of the teeth of the base and the coupler, the biasing force of the cam being greater than the biasing force of the biasing spring; and

a release, configured to release at least part of the biasing force of the cam, to allow the biasing spring to disengage the teeth of the base and the coupler, and allow rotation of the support leg relative to the base.

12. The locking mechanism of claim 11, wherein the cam mechanism further comprises:

a first cam surface, disposed on the coupler;

a cam cylinder, having a second cam surface, the second cam surface being in rotatable sliding engagement with the first cam surface of the coupler, having a first rotational position wherein the first and second cam surfaces are engaged, and a second rotational position

wherein the first and second cam surfaces are disengaged; and

a torsion spring configured to bias the cam cylinder toward the first position.

13. The locking mechanism of claim 12, wherein the release comprises a release lever connected to the cam cylinder, configured to allow a user to rotate the cam cylinder from the first position to the second position.

14. The locking mechanism of claim 12, wherein the torsion spring comprises a piece of resilient material having a first end, a second end, and an elongate axis, the resilient material being affixed at the first end to the base and at the second end to the cam cylinder, the elongate axis being substantially coincident with an axis of rotation of the support leg.

15. The locking mechanism of claim 12, further comprising a first plurality of rotational tabs associated with the cam cylinder, and a second plurality of rotational tabs associated with the base, the rotational tabs being configured to slidingly interlock with each other, such that the socket of the coupler is

slidingly retained upon the hub of the base when the teeth of the base and coupler are disengaged.

16. The locking mechanism of claim 15, wherein the number of rotational tabs in the first plurality is different from the number of rotational tabs in the second plurality, so as to enhance smooth sliding contact of the rotational tabs.

17. A locking mechanism for a folding leg hingedly attached to a support surface, comprising:

a multi-position mating lock, attached to the support surface and the leg, configured for selectively locking the folding leg in an extended position and a folded position;

a biasing member, configured to bias the mating lock toward a disengaged position; and

a selectively releasable cam mechanism, configured to bias the mating lock toward an engaged position, providing a force greater than a disengaging force of the biasing member.

18. The locking mechanism of claim 17, wherein the selectively releasable cam mechanism further comprises:

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slidably mated cam surfaces, associated with the mating lock, having an engaged position and a disengaged position;

an elongate torsion spring, disposed substantially coincident with an axis of rotation of the folding leg, configured to bias the slidably mated cam surfaces toward the engaged position; and

a release lever configured to allow selective rotation of the slidably mated cam surfaces into the disengaged position.

19. The locking mechanism of claim 17, wherein the multi-position mating lock further comprises:

a base, having a plurality of angularly spaced, radial teeth, and a discontinuous circular glide ring disposed about a perimeter of the radial teeth; and

a coupler, having a plurality of angularly spaced, radial teeth, and a discontinuous annular glide ring slot disposed about a perimeter of the radial teeth, the teeth and glide ring of the base being configured to mate with the teeth and glide ring slot of the coupler in the extended position and in the folded position.

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20. The locking mechanism of claim 19, wherein the teeth of the base and the teeth of the coupler are uniform in width.

21. The locking mechanism of claim 19, wherein the teeth of the base and the teeth of the coupler have tapered side faces.

22. A leg-locking mechanism, comprising:

a support leg, hingedly coupled to a support surface and rotatable between an extended position and a folded position;

a base, attached to the support surface, having a plurality of angularly spaced, radial teeth, and a discontinuous circular glide ring disposed about a perimeter of the radial teeth;

a coupler, disposed at an end of the support leg, having a plurality of angularly spaced, radial teeth, and a discontinuous annular glide ring slot disposed about a perimeter of the radial teeth, the teeth and glide ring of the base being configured to mate with the teeth and glide ring slot of the coupler when the support leg is in the extended position and in the folded position; and

a selectively releasable engagement mechanism, configured to engage and disengage the teeth of the base with the teeth of the coupler.